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Uncreative Construction | Domestic Mutations in America

Sean Morgan

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Table of Contents

Thesis Statement

A shift in residential patterns in American cities have fostered a breeding ground for mutant buildings. Owners split, manipulate, and expand their houses as they create idiosyncratic constructs of great visual and spatial complexity. Originally developed for a middle class population, single-family homes have become mixed-use or multi-family complexes thanks to the resourceful implementation of commercial materials.

This thesis aims to develop a new strategy for transforming the normative American house by using the conventions of platform frame construction. Variations will emerge from a set of design constraints, which—unlike that employed for typical houses—are based on data that disregards style and unified compositions. This process attempts to emulate the qualities of the mutated homes found in shrinking cities.

Because mutated homes result from a strange curation of everyday building materials and techniques, I elect to adopt uncreative design procedures. The idea of uncreativity stems from poet Kenneth Goldsmith's uncreative writing, which involve the collection and manipulation of existing texts. With sources ranging from Shakespeare, newspaper articles, to YouTube comments, Goldsmith creates what he calls a "textual ecosystem." He uses this ecosystem as a petri dish for his textual experiments. For Goldsmith, writing is not about authors producing new content but how they alter, manipulate, and arrange found texts to generate compelling, if unpredictable, results.

Borrowing from the spirit of uncreativity, this thesis developed processes for uncreative construction that use data such as average square footage per room, project cost, and percentage of siding material related to geographic regions collected from common house building organizations such as simplyadditions.com, the National Association of Home Builders, the National Association of Realtors, and the City of Syracuse Zoning Code. This information is codified into several textual ecosystems, such as a set of spreadsheets, or a construction manual composed of numeric poems, from which emerge layered arrangements and unexpected forms.

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Mutated Homes

This thesis began with a fascination for everyday homes in post-industrial American cities. This interest led to a collection of "case-study" houses in Syracuse, NY, Pittsburgh, PA, Buffalo, NY, and Detroit, MI.

Certain characteristics such as the ad-hoc use of materials—most often readily available in home improvement stores—and bizarre compositions that feature multiple addtions motivated this selection.

Rebecca Marsh participated to the house selection. A Creative Works Grant offered by Syracuse Architecture's Graduate Programs funded this research.

Untitled 01
Pittsburgh, PA


2-SHORT

Lancaster Market
Syracuse, NY


Malitha's

Syracuse Ceiling Company
Syracuse, NY


BATHS
RACUSE CEILING
COMPANY
ock & Suspended Ceilings
1 Day Installation
Syracuse Ceiling Co. Inc.

Hannibal Lecter
Ann Arbor, MI


ROOMS
FOR RENT

Graby's
Syracuse, NY


GRADYS

Rene's House
Syracuse, NY

Cooper Beech Commons
Syracuse, NY

Uncreative Writing

Kenneth Goldsmith

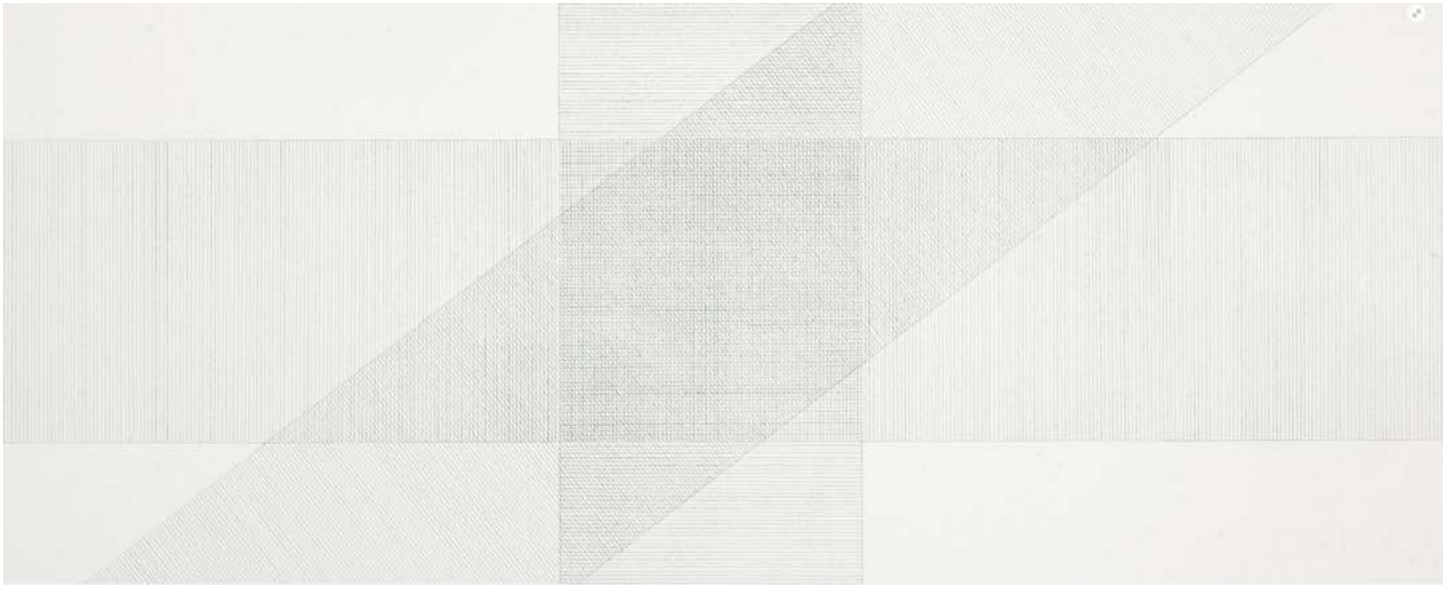
Uncreativity

Because mutated homes result from a strange curation of everyday building materials and techniques, I have elected to adopt uncreative design procedures. The idea of uncreativity stems from poet Kenneth Goldsmith's uncreative writing, which involve the collection and manipulation of existing texts. With sources ranging from Shakespeare, newspaper articles, to YouTube comments, Goldsmith creates what he calls a "textual ecosystem." He uses this ecosystem as a petri dish for his textual experiments. For Goldsmith, writing is not about authors producing new content but how they alter, manipulate, and arrange found texts to generate compelling, if unpredictable, results.

Researching Uncreative methods has brought about certain architectural and conceptual precedents:

One sheet of clear plexiglass of arb
Itrary size and thickness secured at
the four corners and exact center by
screws to the floor

Statements, 1968
Lawrence Weiner
Booklet of statements for people to participate in. Statements are intentionally dry to allow each subject to interpret the statements in their own way.

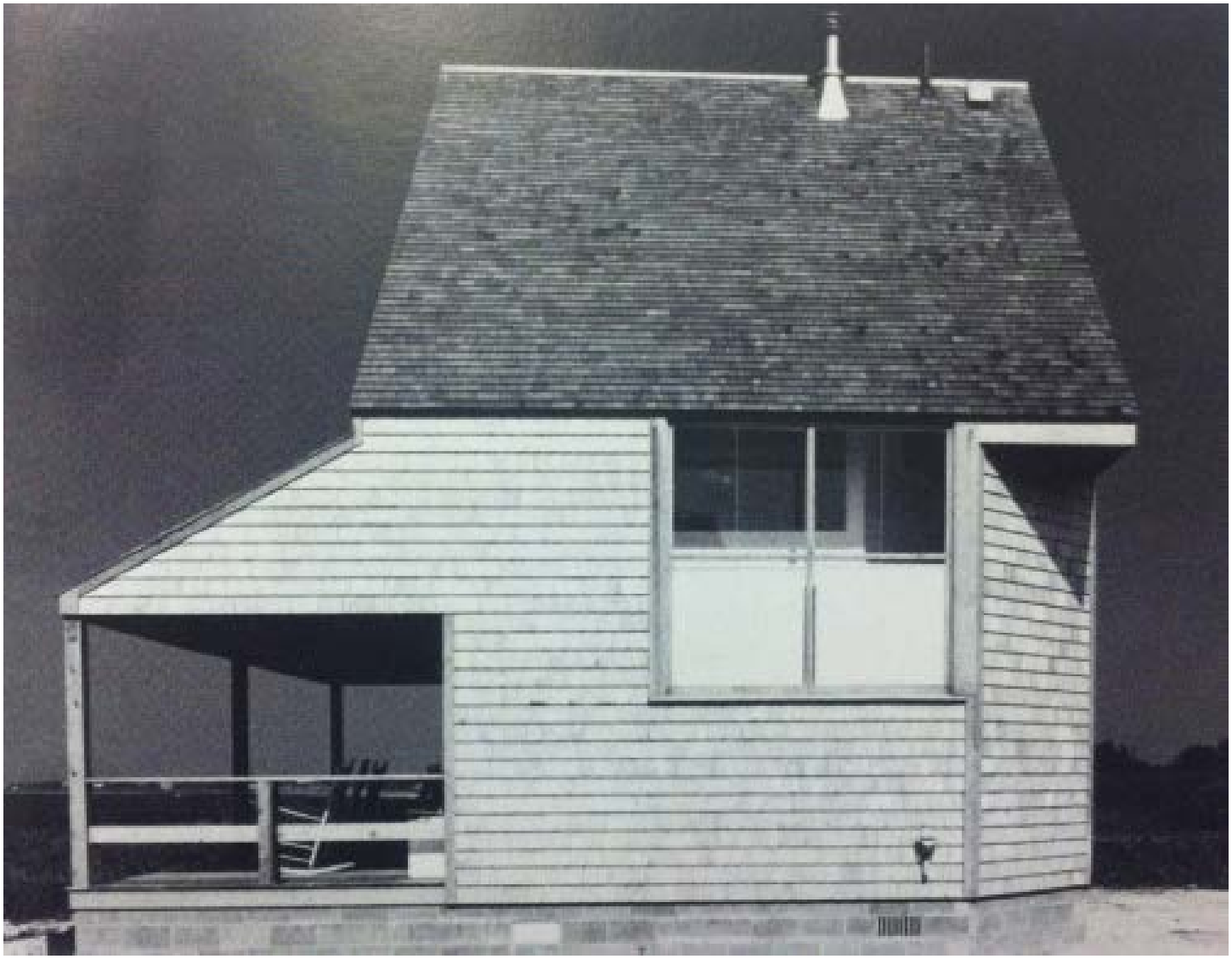


Wall Drawings, 1969 - 2007
Sol Lewitt
The wall drawings are executed from a set of instructions or specifications that Sol Lewitt creates.

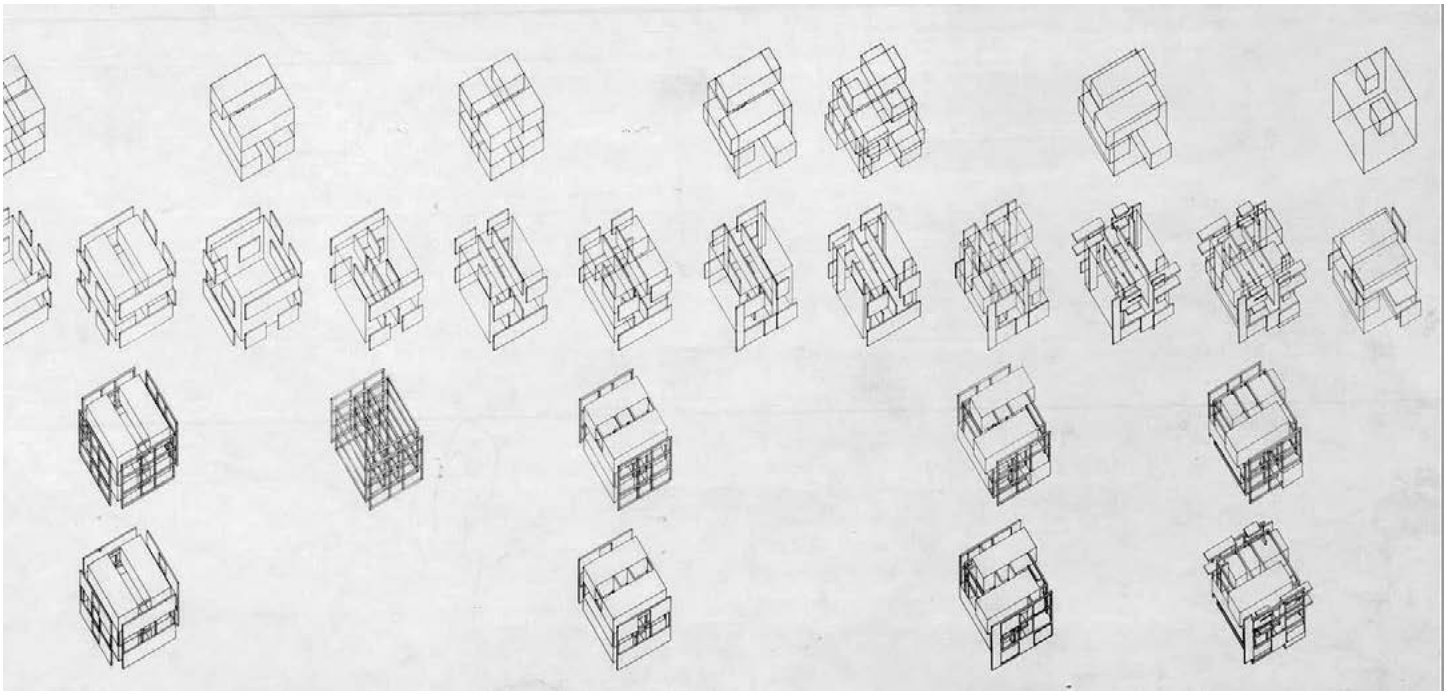
Come Out, 1966
Steve Reich
The use of everyday recording as medium for musical manipulation. Two loops of tape are phased in and out of rhythm, creating unexpected and layered sounds.

1,9
1,1,9
1,1,1,9
9
1,1,1,9
8,4
1,1,1,1,1,9
8,4
8,4

Seven Number Poems, 1971
Neil Mills
The poems must be experienced through the act of saying aloud the lines of numbers which creates a rhythm. The understanding of the poem is through each person's unique vocal rhythms, rather than the numbers themselves.



Trubeck - Wislocki Houses, 1971
Venturi, Scott Brown and Associates
The Trubeck – Wislocki Houses explore Venturi and Scott Brown's fascination with the ugly and ordinary. Their work focuses on the manipulation of American vernacular elements.



Ten Houses, 1967 - 1978
Peter Eiseman
Eiseman's Ten Houses are a series of house designs that are derived from various autonomous form generations.

DiY Cabins
Tisza River Hungary
The summer cabins along the Tisza River in Hungary are all self-made and exhibit unique material and compositional characteristics.

Textual Ecosystem 01: Construction Manual

I began to develop a new type of construction document for framing a house without drawings. Similar to some of the precedents, this construction document uses only numbers and conditions to instruct the building process.

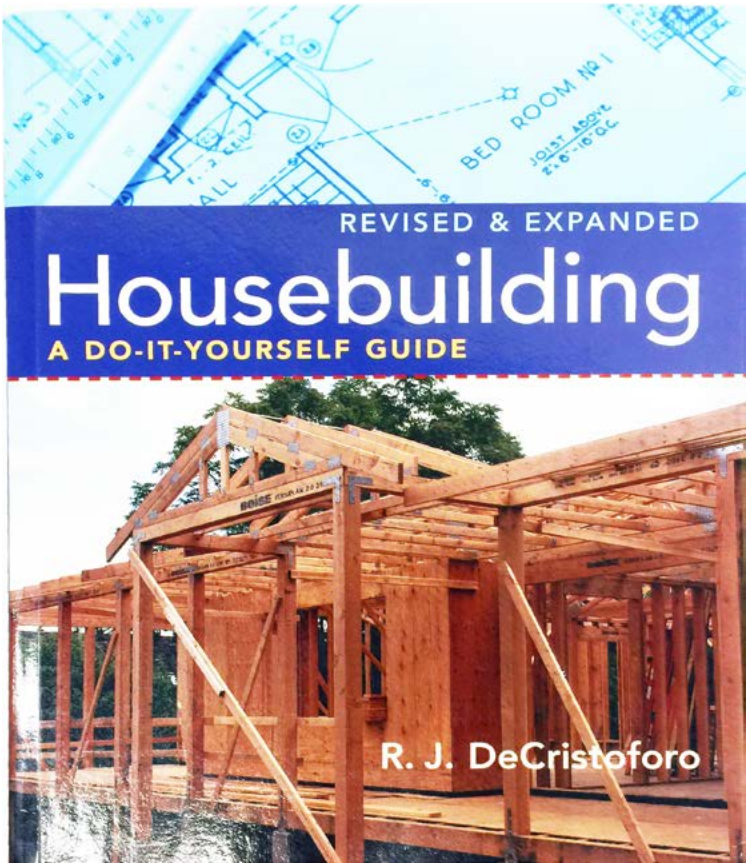
Each spread of the manual contains a numeric poem which designates certain actions which are paired with conditions (i.e. place vertically) and dimensions. This construction rhythm is separated into various chapters (floor 01, wall 01, wall 02, etc.) which are to be constructed in sequence.

The first version of this manual was designed to create a 12' x 16' two story addition. This version of the manual was given to three different groups of students who were without knowledge of domestic framing techniques to translate @ 1/16th scale.

Model 01:
Hanneke Van Deursen
Ran Xie
Umut Guney
Nicholas Seag-Ji Jung

Model 02:
Ayebanengiyefa Wabote
Heber Santos
Eliza Williamson

Model 03:
Sachio Badham
Dian Gu
Ziyu Zhan


BED ROOM No 1
REVISED & EXPANDED
Housebuilding
A DO-IT-YOURSELF GUIDE
R. J. DeCristoforo

1. Select

2. Designate

3. Mark

4. Cut

5. Attach

6. Double

7. Repeat

8. Calculate

9. Insert






Notes / Rules

Model scale is 1:16 (divide all real measurements by 16)

All instructions are meant to be constructed as they are read, from left to right

Make sure to read all corresponding instructions before constructing pieces of model

Since there is an exact amount of pieces in the kit, any ad-lib pieces must be used from scrap cuts

When designating large groups of wood apply a number to them (i.e. studs 1-10)

When doubling pieces apply a .2 after (i.e. 1.2)

Document all notes or sketches on the construction manual

Actions Legend

1. Select

2. Designate

3. Mark

4. Cut

5. Attach

6. Double

7. Repeat

8. Calculate

9. Insert

Table of Contents

Addition 01

1, 1, 2
3
5

1, 1, 4, 2
5

1, 1, 2
3
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 2
5
7

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = horizontally N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 2
3
5

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = 137”	4. Cut to (b)
M = horizontally N = top of foundation wall 01 and 03	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 4, 2
5

Floor 01
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = vertically N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

Floor 01
Header

1, 1, 2
3
5

Floor 01
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
Y = 16” on center	4. Cut to (b)
b = 144”	5. Attach pieces (M) to (N)
M =vertically N = marks on headers	

Floor 01
Joists

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Floor 01
Subflooring

Given Information

x = 48”
y = 96”
z = 5/8”

X = Subflooring

M =horizontally
N = to floor joists. Long direction should go perpendicular to direction of joists.

Y = until all Floor is completely covered. Stagger boards @ midpoint.

Actions

1. Select (x) x (y) x (z) OSB

2. Designate piece(s) as (X)

5. Attach pieces (M) to (N)

7. Repeat (Y)

Floor 01
Subflooring

1, 2
5
7

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

9
1, 4, 2,
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 01
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Soleplate

1, 4, 2
3

Wall 01
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Top plate

1, 1, 4, 2
3

Wall 01
Studs

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = soleplate and top plate, excluding studs 4 and 8

B = studs 3, 5, 7, 9

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 01
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 01
Door 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of door frame	6. Double (B)
B = header	9. Insert (H)
H = Door 01 in between studs 3 and 5	

Wall 01
Door 01

9
1, 4, 2,
6
5

Wall 01
Door 01

Given Information	Actions
X = studs 3.2 ,4, 5.2 b = 8” M = vertically N = top of headers @ regular stud spacing	1. Select (X) 4. Cut to (b) 5. Attach pieces (M) to (N)

Wall 01
Door 01

1, 4
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 01	
B = top of trimmers	

Wall 01
Window 01

1, 4, 2
5
9

Wall 01
Window 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 01
Window 01

1, 4, 2
6
5

Wall 01

Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Window 01

1, 4
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 01 (M) to (N)

Wall 01
Window 01

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

5

Wall 02
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Soleplate

1, 4, 2
3

Wall 02
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Top plate

1, 1, 4, 2
3

Wall 02
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 1 and Top plate 1, excluding stud 3	6. Double (B)
B = studs 2, 4, 6	

Wall 02
Studs

1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 2 and Top plate 2, excluding stud 7	6. Double (B)
B = studs 8	

Wall 02
Studs

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 02	9. Insert (H) to (B)
B = top of trimmers	

Wall 02
Window 02

1, 4, 2
5
9

Wall 02
Window 02

x = 2”
y = 8”
z = 192”

1. Select (x) x (y) x (z) Dimensional Lumber

X = Header

2. Designate piece(s) as (X)

b = 30”

4. Cut to (b)

M = horizontally

5. Attach pieces (M) to (N)

N = top of window frame

6. Double (B)

B = header

Wall 02
Window 02

1, 4, 2
6
5

Wall 02

Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2 b = 13” M = vertically N = top of headers @ regular stud spacing	1. Select (X) 4. Cut to (b) 5. Attach pieces (M) to (N)

Wall 02
Window 02

1, 4
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2	
Y = trimmers	1. Select (X)
b = 24”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 03	9. Insert (H) to (B)
B = top of trimmers	

Wall 02
Window 03

1, 4, 2
5
9

Wall 02
Window 03

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 02
Window 03

1, 4, 2
6
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2 b = 13” M = vertically N = top of headers @ regular stud spacing	1. Select (X) 4. Cut to (b) 5. Attach pieces (M) to (N)

Wall 02
Window 03

1, 4
5

Given Information	Actions
M = vertically N = 42” inset from the edge of Floor 01	5. Attach Wall 02.1 (M) to (N)

5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 02.2 (M) to (N)

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

5

Wall 03
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 03
Soleplate

1, 4, 2
3

Wall 03
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 03
Top plate

1, 1, 4, 2
3

Wall 03
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate and top plate	

Wall 03
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 03 (M) to (N)

5

1, 2
3

1, 2,
3
4

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 4, 2
5
6

1, 1, 4, 2
5
6

5

1, 4, 2
5

1, 2
5
7

Floor 02
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)

Floor 02
Header

1, 2
3

Floor 02
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = $96^{3/4}$”, $57^{3/4}$”, 36”	4. Cut to (b)

Floor 02
Header

1, 2,
3
4

Floor 02
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

b = 138-3/4”

M =horizontally
N = header 1 and header 2

B = Header 2 and Joist 7

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Floor 02
Joists

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Floor 02
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

b = 99-1/4”

M =horizontally
N = header 1 and header 2

B = Header 3 and Joist 10

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Floor 02
Joists

1, 1, 1, 4, 2
5
6

Floor 02
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

b = 31-3/4”

M =horizontally
N = header 1 and header 2

B = Header 4

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Floor 02
Joists

1, 1, 4, 2
5
6

Floor 02
Joists

Given Information	Actions
M =horizontally N = top plates of wall 01, wall 02, and wall 03	5. Attach pieces (M) to (N)

Floor 02
Joists

5

Floor 02
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
b = 144”	4. Cut to (b)
M =horizontally N = top plate of wall 03	5. Attach pieces (M) to (N)

Floor 02
Joists

1, 4, 2
5

Floor 02
Subflooring

Given Information

x = 48”
y = 96”
z = 5/8”

X = Subflooring

M =horizontally
N = to floor joists. Long direction should go perpendicular to direction of joists.

Y = until all Floor is completely covered. Stagger boards @ midpoint.

Actions

1. Select (x) x (y) x (z) OSB

2. Designate piece(s) as (X)

5. Attach pieces (M) to (N)

7. Repeat (Y)

Floor 02
Subflooring

1, 2
5
7

1
5

1, 1
5

1, 1
5

1, 1, 1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1
5

X = Landing and Platform

M = vertically

N = Floor 01 adjacent to Stud 10 of Wall 03

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Landing and Platform

1
5

X = Stringer 1 and Stringer 1.2

M = diagonally

N = Top of Floor 01, connecting Joist 5 to Side 01 of Landing platform

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Stringer

1, 1
5

X = Stringer 2 and Stringer 2.2

M = diagonally

N = Top of Landing Platform , connecting side 02 to Header 3 of Floor 02

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Stringer

1, 1
5

X = Risers 1 - 1.8

M = vertically

N = vertical faces of Stringer 1 and Stringer 1.2

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Risers

1, 1, 1, 1, 1, 1, 1, 1
5

X = Risers 2 - 2.6

M = vertically

N = vertical faces of Stringer 2 and Stringer 2.2

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Risers

1, 1, 1, 1, 1, 1
5

X = Treads 1 - 1.7

M = horizontally

N = horizontal faces of Stringer 1 and Stringer 1.2

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Treads

1, 1, 1, 1, 1, 1, 1
5

X = Treads 2 - 2.6

M = horizontally

N = horizontal faces of Stringer 2 and Stringer 2.2

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Treads

1, 1, 1, 1, 1, 1
5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 04
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 04
Soleplate

1, 4, 2
3

Wall 04
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 04
Top plate

1, 1, 4, 2
3

Wall 04
Studs

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = soleplate and top plate, excluding studs 3 and 8

B = studs 2, 4, 7, 9

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 04
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 04
Window 04

Given Information	Actions
X = studs 2.2, 3, 4.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 04	9. Insert (H) to (B)
B = top of trimmers	

Wall 04
Window 04

1, 4, 2
5
9

Wall 04
Window 04

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 04
Window 04

1, 4, 2
6
5

Wall 04
Window 04

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 04
Window 04

1, 4
5

Wall 04
Window 05

Given Information	Actions
X = studs 7.2, 8, 9.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 05	9. Insert (H) to (B)
B = top of trimmers	

Wall 04
Window 05

1, 4, 2
5
9

Wall 04
Window 05

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 04
Window 05

1, 4, 2
6
5

Wall 04
Window 05

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 04
Window 05

1, 4
5

Given Information	Actions
M = vertically N = Floor 02 above wall 01	5. Attach Wall 01 (M) to (N)

5

Wall 05

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

5

Wall 05
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 05
Soleplate

1, 4, 2
3

Wall 05
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 05
Top plate

1, 1, 4, 2
3

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = Soleplate 1 and Top plate 1, excluding stud 3

B = studs 2, 4, 6

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 05
Studs

1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 05
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 2 and Top plate 2, excluding studs 7 and 11	6. Double (B)
B = studs 8, 10, 12	

Wall 05
Studs

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 05
Window 06

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 06	
B = top of trimmers	

Wall 05
Window 06

1, 4, 2
5
9

x = 2”
y = 8”
z = 192”

X = Header

b = 30”

M = horizontally

N = top of window frame

B = header

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 05
Window 06

1, 4, 2
6
5

Wall 05
Window 06

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 05
Window 06

1, 4
5

Wall 05
Window 07

Given Information	Actions
X = studs 6.2, 7, 8.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 07	9. Insert (H) to (B)
B = top of trimmers	

Wall 05
Window 07

1, 4, 2
5
9

x = 2”
y = 8”
z = 192”

X = Header

b = 30”

M = horizontally

N = top of window frame

B = header

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 05
Window 07

1, 4, 2
6
5

Wall 05
Window 07

Given Information	Actions
X = studs 6.2, 7, 8.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 05
Window 07

1, 4
5

Wall 05
Window 08

Given Information	Actions
X = studs 11.2, 12, 13.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 08	
B = top of trimmers	

Wall 05
Window 08

1, 4, 2
5
9

Wall 05
Window 08

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 05
Window 08

1, 4, 2
6
5

Wall 05
Window 08

Given Information	Actions
X = studs 11.2, 12, 13.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 05
Window 08

1, 4
5

Given Information	Actions
M = vertically N = 42” inset from the edge of Floor 01	5. Attach Wall 05.1 (M) to (N)

5

Given Information	Actions
M = vertically N = Floor 02 above Wall 02.2	5. Attach Wall 05.2 (M) to (N)

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 06
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 06
Soleplate

1, 4, 2
3

Wall 06
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 06
Top plate

1, 1, 4, 2
3

Wall 06
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate and top plate, excluding studs 8	6. Double (B)
B = studs 7 and 9	

Wall 06
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 06
Window 09

Given Information	Actions
X = studs 7.2, 8, 9.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 09	9. Insert (H) to (B)
B = top of trimmers	

Wall 06
Window 09

1, 4, 2
5
9

Wall 06
Window 09

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 06
Window 09

1, 4, 2
6
5

Wall 06
Window 09

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 06
Window 09

1, 4
5

Given Information	Actions
M = vertically N = Floor 02 above Wall 03	5. Attach Wall 06 (M) to (N)

5

3
1, 1, 1, 1, 1, 1, 1, 1, 1, 1
5

2, 8

1, 4, 2
3
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

x = 2”
y = 8”
z = 192”

B = Top plates of Wall 04 and Wall 06

H = 16” O.C.

M = horizontally
N = marks on Top plates of Wall 04 and Wall 06

1. Select (x) x (y) x (z) dimensional lumber

3. Mark (B) @ (H)

5. Attach pieces (M) to (N)

Roof
Ceiling

3
1, 1, 1, 1, 1, 1, 1, 1, 1, 1
5

n = 48”

2. Designate height of roof = (n)

m = (n) / (192”)

8. Calculate Roof Pitch (m)

2, 8

x = 2”
y = 8”
z = 192”

b = 144”

X = Ridge joist

Y = 16” O.C.

M = horizontally
N = 48” above roof joists 64” inset from top of Wall 04

1. Select (x) x (y) x (z) dimensional lumber

2. Designate height of roof (X)

3. Mark piece @ (Y)

4. Cut to (b)

5. Attach (M) to (N)

1, 4, 2
3
5

Roof
Rafters

x = 2”
y = 6”
z = 192”

b = 120”

Y = Rafters 1-1.10

M = diagonally
N = marks on Ridge Joist to sides of Roof Joists above Wall 04

1. Select (x) x (y) x (z) dimensional lumber

2. Designate height of roof (Y)

4. Cut to (b)

5. Attach (M) to (N)

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

x = 2”
y = 6”
z = 192”

b = 120”

Y = Rafters 2-2.10

M = diagonally
N = marks on Ridge Joist to sides of Roof Joists above Wall 06

1. Select (x) x (y) x (z) dimensional lumber

2. Designate height of roof (Y)

4. Cut to (b)

5. Attach (M) to (N)

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 2
5
7

1, 2
5
7

1, 2
4
5
7

x = 48”
y = 96”
z = 5/8”

X = Sheathing

M =vertically
N = exterior of wall studs. Place long direction perpendicular to wall studs.

Y = until all walls are completely covered. Stagger boards @ midpoint.

1. Select (x) x (y) x (z) OSB

2. Designate piece(s) as (X)

5. Attach pieces (M) to (N)

7. Repeat (Y)

1, 2
5
7

x = 48”
y = 96”
z = 5/8”

X = Sheathing

M = horizontally
N = exterior of Roof frame. Place long direction perpendicular to rafters.

Y = until all roof is completely covered. Stagger boards @ midpoint.

1. Select (x) x (y) x (z) OSB

2. Designate piece(s) as (X)

5. Attach pieces (M) to (N)

7. Repeat (Y)

1, 2
5
7

x = 48”
y = 96”
z = 1”

X = Siding

b = 45° angle from base of first corner

M =vertically
N = exterior of wall. Place long direction perpendicular to wall studs.

Y = until all walls are completely covered. Stagger clapboard @ midpoint.

1. Select (x) x (y) x (z) Cedar Clapboard

2. Designate piece(s) as (X)

4. Cut (b)

5. Attach pieces (M) to (N)

7. Repeat (Y)

1, 2
4
5
7

Mutation 01

1, 1, 2
3
5

1, 1, 4, 2
5

1, 1, 2
3
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 2
5
7

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = horizontally N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 2
3
5

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = 137”	4. Cut to (b)
M = horizontally N = top of foundation wall 01 and 03	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 4, 2
5

Floor 01
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = vertically N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

1, 1, 2
3
5

Floor 01
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
Y = 16” on center	4. Cut to (b)
b = 144”	5. Attach pieces (M) to (N)
M =vertically N = marks on headers	

Floor 01
Joists

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Floor 01
Subflooring

Given Information	Actions
x = 48” y = 96” z = 5/8”	1. Select (x) x (y) x (z) OSB
X = Subflooring	2. Designate piece(s) as (X)
M =horizontally N = to floor joists. Long direction should go perpendicular to direction of joists.	5. Attach pieces (M) to (N)
Y = until all Floor is completely covered. Stagger boards @ midpoint.	7. Repeat (Y)

Floor 01
Subflooring

1, 2
5
7

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

9
1, 4, 2,
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 01
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Soleplate

1, 4, 2
3

Wall 01
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Top plate

1, 1, 4, 2
3

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = soleplate and top plate, excluding studs 4 and 8

B = studs 3, 5, 7, 9

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 01
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 01
Door 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of door frame	6. Double (B)
B = header	9. Insert (H)
H = Door 01 in between studs 3 and 5	

Wall 01
Door 01

9
1, 4, 2,
6
5

Wall 01
Door 01

Given Information	Actions
X = studs 3.2 ,4, 5.2	1. Select (X)
b = 8”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Door 01

1, 4
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 01	9. Insert (H) to (B)
B = top of trimmers	

Wall 01
Window 01

1, 4, 2
5
9

Wall 01
Window 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 01
Window 01

1, 4, 2
6
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Window 01

1, 4
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 01 (M) to (N)

Wall 01
Window 01

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

5

Wall 02
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Soleplate

1, 4, 2
3

Wall 02
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Top plate

1, 1, 4, 2
3

Wall 02
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 1 and Top plate 1, excluding stud 3	6. Double (B)
B = studs 2, 4, 6	

Wall 02
Studs

1, 1, 1, 1, 1, 1, 4, 2
5
6

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = Soleplate 2 and Top plate 2, excluding stud 7

B = studs 8

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 02
Studs

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 02	
B = top of trimmers	

Wall 02
Window 02

1, 4, 2
5
9

x = 2”
y = 8”
z = 192”

X = Header

b = 30”

M = horizontally

N = top of window frame

B = header

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 02
Window 02

1, 4, 2
6
5

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 02
Window 02

1, 4
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2	
Y = trimmers	1. Select (X)
b = 24”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 03	9. Insert (H) to (B)
B = top of trimmers	

1, 4, 2
5
9

Wall 02
Window 03

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 02
Window 03

1, 4, 2
6
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 02
Window 03

1, 4
5

Given Information	Actions
M = vertically N = 42” inset from the edge of Floor 01	5. Attach Wall 02.1 (M) to (N)

5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 02.2 (M) to (N)

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

5

Wall 03
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 03
Soleplate

1, 4, 2
3

Wall 03
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 03
Top plate

1, 1, 4, 2
3

Wall 03
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate and top plate	

Wall 03
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 03 (M) to (N)

5

1, 2
3

1, 2,
3
4

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 4, 2
5
6

1, 1, 4, 2
5
6

5

1, 4, 2
5

1, 2
5
7

Floor 02
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)

Floor 02
Header

1, 2
3

Floor 02
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = $96^{3/4}$”, $57^{3/4}$”, 36”	4. Cut to (b)

Floor 02
Header

1, 2,
3
4

Floor 02
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
b = 138-3/4”	4. Cut to (b)
M =horizontally N = header 1 and header 2	5. Attach pieces (M) to (N)
B = Header 2 and Joist 7	6. Double (B)

Floor 02
Joists

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Floor 02
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

b = 99-1/4”

M =horizontally
N = header 1 and header 2

B = Header 3 and Joist 10

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Floor 02
Joists

1, 1, 1, 4, 2
5
6

Floor 02
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
b = 31-3/4”	4. Cut to (b)
M =horizontally N = header 1 and header 2	5. Attach pieces (M) to (N)
B = Header 4	6. Double (B)

Floor 02
Joists

1, 1, 4, 2
5
6

Floor 02
Joists

Given Information	Actions
M =horizontally N = top plates of wall 01, wall 02, and wall 03	5. Attach pieces (M) to (N)

Floor 02
Joists

5

Floor 02
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
b = 144”	4. Cut to (b)
M =horizontally N = top plate of wall 03	5. Attach pieces (M) to (N)

Floor 02
Joists

1, 4, 2
5

Floor 02
Subflooring

Given Information

x = 48”
y = 96”
z = 5/8”

X = Subflooring

M =horizontally
N = to floor joists. Long direction should go perpendicular to direction of joists.

Y = until all Floor is completely covered. Stagger boards @ midpoint.

Actions

1. Select (x) x (y) x (z) OSB

2. Designate piece(s) as (X)

5. Attach pieces (M) to (N)

7. Repeat (Y)

Floor 02
Subflooring

1, 2
5
7

1
5

1, 1
5

1, 1
5

1, 1, 1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1
5

X = Landing and Platform

M = vertically

N = Floor 01 adjacent to Stud 10 of Wall 03

1. Select (X)

5. Attach pieces (M) to (N)

1
5

X = Stringer 1 and Stringer 1.2

M = diagonally

N = Top of Floor 01, connecting Joist 5 to Side 01 of Landing platform

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Stringer

1, 1
5

X = Stringer 2 and Stringer 2.2

M = diagonally

N = Top of Landing Platform , connecting side 02 to Header 3 of Floor 02

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Stringer

1, 1
5

X = Risers 1 - 1.8

M = vertically

N = vertical faces of Stringer 1 and Stringer 1.2

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Risers

1, 1, 1, 1, 1, 1, 1, 1
5

X = Risers 2 - 2.6

M = vertically

N = vertical faces of Stringer 2 and Stringer 2.2

1. Select (X)

5. Attach pieces (M) to (N)

1, 1, 1, 1, 1, 1
5

X = Treads 1 - 1.7

M = horizontally

N = horizontal faces of Stringer 1 and Stringer 1.2

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Treads

1, 1, 1, 1, 1, 1, 1
5

X = Treads 2 - 2.6

M = horizontally

N = horizontal faces of Stringer 2 and Stringer 2.2

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Treads

1, 1, 1, 1, 1, 1
5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 04
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 04
Soleplate

1, 4, 2
3

Wall 04
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 04
Top plate

1, 1, 4, 2
3

Wall 04
Studs

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = soleplate and top plate, excluding studs 3 and 8

B = studs 2, 4, 7, 9

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 04
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 04
Window 04

Given Information	Actions
X = studs 2.2, 3, 4.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 04	9. Insert (H) to (B)
B = top of trimmers	

Wall 04
Window 04

1, 4, 2
5
9

Wall 04
Window 04

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 04
Window 04

1, 4, 2
6
5

Wall 04
Window 04

Given Information	Actions
X = studs 2.2, 3, 4.2 b = 13” M = vertically N = top of headers @ regular stud spacing	1. Select (X) 4. Cut to (b) 5. Attach pieces (M) to (N)

Wall 04
Window 04

1, 4
5

Mutation 02

1, 1, 2
3
5

1, 1, 4, 2
5

1, 1, 2
3
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 2
5
7

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = horizontally N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 2
3
5

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = 137”	4. Cut to (b)
M = horizontally N = top of foundation wall 01 and 03	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 4, 2
5

Floor 01
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = vertically N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

1, 1, 2
3
5

Floor 01
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

Y = 16” on center

b = 144”

M =vertically
N = marks on headers

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

Floor 01
Joists

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Floor 01
Subflooring

Given Information	Actions
x = 48” y = 96” z = 5/8”	1. Select (x) x (y) x (z) OSB
X = Subflooring	2. Designate piece(s) as (X)
M =horizontally N = to floor joists. Long direction should go perpendicular to direction of joists.	5. Attach pieces (M) to (N)
Y = until all Floor is completely covered. Stagger boards @ midpoint.	7. Repeat (Y)

Floor 01
Subflooring

1, 2
5
7

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

9
1, 4, 2,
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 01
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Soleplate

1, 4, 2
3

Wall 01
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Top plate

1, 1, 4, 2
3

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = soleplate and top plate, excluding studs 4 and 8

B = studs 3, 5, 7, 9

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 01
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 01
Door 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of door frame	6. Double (B)
B = header	9. Insert (H)
H = Door 01 in between studs 3 and 5	

Wall 01
Door 01

9
1, 4, 2,
6
5

Wall 01
Door 01

Given Information	Actions
X = studs 3.2 ,4, 5.2 b = 8” M = vertically N = top of headers @ regular stud spacing	1. Select (X) 4. Cut to (b) 5. Attach pieces (M) to (N)

Wall 01
Door 01

1, 4
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 01	
B = top of trimmers	

Wall 01
Window 01

1, 4, 2
5
9

Wall 01
Window 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 01
Window 01

1, 4, 2
6
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Window 01

1, 4
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 01 (M) to (N)

Wall 01
Window 01

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

5

Wall 02
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Soleplate

1, 4, 2
3

Wall 02
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Top plate

1, 1, 4, 2
3

Wall 02
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 1 and Top plate 1, excluding stud 3	6. Double (B)
B = studs 2, 4, 6	

Wall 02
Studs

1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 2 and Top plate 2, excluding stud 7	6. Double (B)
B = studs 8	

Wall 02
Studs

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 02	9. Insert (H) to (B)
B = top of trimmers	

Wall 02
Window 02

1, 4, 2
5
9

x = 2”
y = 8”
z = 192”

X = Header

b = 30”

M = horizontally

N = top of window frame

B = header

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 02
Window 02

1, 4, 2
6
5

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 02
Window 02

1, 4
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2	
Y = trimmers	1. Select (X)
b = 24”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 03	9. Insert (H) to (B)
B = top of trimmers	

Wall 02
Window 03

1, 4, 2
5
9

Wall 02
Window 03

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 02
Window 03

1, 4, 2
6
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2 b = 13” M = vertically N = top of headers @ regular stud spacing	1. Select (X) 4. Cut to (b) 5. Attach pieces (M) to (N)

Wall 02
Window 03

1, 4
5

Given Information	Actions
M = vertically N = 42” inset from the edge of Floor 01	5. Attach Wall 02.1 (M) to (N)

5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 02.2 (M) to (N)

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

5

Wall 03
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 03
Soleplate

1, 4, 2
3

Wall 03
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 03
Top plate

1, 1, 4, 2
3

Wall 03
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate and top plate	

Wall 03
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 03 (M) to (N)

5

1, 2
3

1, 2,
3
4

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 4, 2
5
6

1, 1, 4, 2
5
6

5

1, 4, 2
5

1, 2
5
7

Floor 02
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)

1, 2
3

Floor 02
Header

Given Information	Actions
x = 2” y = 8” z = 192” X = Header Y = 16” on center b = $96^{3/4}$”, $57^{3/4}$”, 36”	1. Select (x) x (y) x (z) dimensional lumber 2. Designate piece(s) as (X) 3. Mark piece @ (Y) 4. Cut to (b)

1, 2,
3
4

Floor 02
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

b = 138-3/4”

M =horizontally
N = header 1 and header 2

B = Header 2 and Joist 7

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Floor 02
Joists

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Floor 02
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

b = 99-1/4”

M =horizontally
N = header 1 and header 2

B = Header 3 and Joist 10

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Floor 02
Joists

1, 1, 1, 4, 2
5
6

Floor 02
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
b = 31-3/4”	4. Cut to (b)
M =horizontally N = header 1 and header 2	5. Attach pieces (M) to (N)
B = Header 4	6. Double (B)

Floor 02
Joists

1, 1, 4, 2
5
6

Floor 02
Joists

Given Information	Actions
M =horizontally N = top plates of wall 01, wall 02, and wall 03	5. Attach pieces (M) to (N)

Floor 02
Joists

5

Floor 02
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
b = 144”	4. Cut to (b)
M =horizontally N = top plate of wall 03	5. Attach pieces (M) to (N)

Floor 02
Joists

1, 4, 2
5

Floor 02
Subflooring

Given Information	Actions
x = 48” y = 96” z = 5/8”	1. Select (x) x (y) x (z) OSB
X = Subflooring	2. Designate piece(s) as (X)
M =horizontally N = to floor joists. Long direction should go perpendicular to direction of joists.	5. Attach pieces (M) to (N)
Y = until all Floor is completely covered. Stagger boards @ midpoint.	7. Repeat (Y)

Floor 02
Subflooring

1, 2
5
7

1
5

1, 1
5

1, 1
5

1, 1, 1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1, 1
5

1, 1, 1, 1, 1, 1
5

X = Landing and Platform

M = vertically

N = Floor 01 adjacent to Stud 10 of Wall 03

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Landing and Platform

1
5

X = Stringer 1 and Stringer 1.2

M = diagonally

N = Top of Floor 01, connecting Joist 5 to Side 01 of Landing platform

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Stringer

1, 1
5

X = Stringer 2 and Stringer 2.2

M = diagonally

N = Top of Landing Platform , connecting side 02 to Header 3 of Floor 02

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Stringer

1, 1
5

X = Risers 1 - 1.8

M = vertically

N = vertical faces of Stringer 1 and Stringer 1.2

1. Select (X)

5. Attach pieces (M) to (N)

Stairs 01
Risers

1, 1, 1, 1, 1, 1, 1, 1
5

X = Risers 2 - 2.6

M = vertically

N = vertical faces of Stringer 2 and Stringer 2.2

1. Select (X)

5. Attach pieces (M) to (N)

1, 1, 1, 1, 1, 1
5

Mutation 03

1, 1, 2
3
5

1, 1, 4, 2
5

1, 1, 2
3
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 2
5
7

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = horizontally N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 2
3
5

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = 137”	4. Cut to (b)
M = horizontally N = top of foundation wall 01 and 03	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 4, 2
5

Floor 01
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = vertically N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

1, 1, 2
3
5

Floor 01
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
Y = 16” on center	4. Cut to (b)
b = 144”	5. Attach pieces (M) to (N)
M =vertically N = marks on headers	

Floor 01
Joists

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Floor 01
Subflooring

Given Information	Actions
x = 48” y = 96” z = 5/8”	1. Select (x) x (y) x (z) OSB
X = Subflooring	2. Designate piece(s) as (X)
M =horizontally N = to floor joists. Long direction should go perpendicular to direction of joists.	5. Attach pieces (M) to (N)
Y = until all Floor is completely covered. Stagger boards @ midpoint.	7. Repeat (Y)

Floor 01
Subflooring

1, 2
5
7

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

9
1, 4, 2,
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 01
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Soleplate

1, 4, 2
3

Wall 01
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Top plate

1, 1, 4, 2
3

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = soleplate and top plate, excluding studs 4 and 8

B = studs 3, 5, 7, 9

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 01
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 01
Door 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of door frame	6. Double (B)
B = header	9. Insert (H)
H = Door 01 in between studs 3 and 5	

Wall 01
Door 01

9
1, 4, 2,
6
5

Wall 01
Door 01

Given Information	Actions
X = studs 3.2 ,4, 5.2 b = 8” M = vertically N = top of headers @ regular stud spacing	1. Select (X) 4. Cut to (b) 5. Attach pieces (M) to (N)

Wall 01
Door 01

1, 4
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 01	
B = top of trimmers	

Wall 01
Window 01

1, 4, 2
5
9

Wall 01
Window 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 01
Window 01

1, 4, 2
6
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Window 01

1, 4
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 01 (M) to (N)

Wall 01
Window 01

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

5

Wall 02
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Soleplate

1, 4, 2
3

Wall 02
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Top plate

1, 1, 4, 2
3

Wall 02
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 1 and Top plate 1, excluding stud 3	6. Double (B)
B = studs 2, 4, 6	

Wall 02
Studs

1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Studs

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = Soleplate 2 and Top plate 2, excluding stud 7

B = studs 8

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	
Y = trimmers	1. Select (X)
b = 36”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 02	9. Insert (H) to (B)
B = top of trimmers	

Wall 02
Window 02

1, 4, 2
5
9

Wall 02
Window 02

x = 2”
y = 8”
z = 192”

X = Header

b = 30”

M = horizontally

N = top of window frame

B = header

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 02
Window 02

1, 4, 2
6
5

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 02
Window 02

1, 4
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2	
Y = trimmers	1. Select (X)
b = 24”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 03	9. Insert (H) to (B)
B = top of trimmers	

Wall 02
Window 03

1, 4, 2
5
9

Wall 02
Window 03

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 02
Window 03

1, 4, 2
6
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 02
Window 03

1, 4
5

Given Information	Actions
M = vertically N = 42” inset from the edge of Floor 01	5. Attach Wall 02.1 (M) to (N)

5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 02.2 (M) to (N)

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

5

Wall 03
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 03
Soleplate

1, 4, 2
3

Wall 03
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 03
Top plate

1, 1, 4, 2
3

Wall 03
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate and top plate	

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 03 (M) to (N)

5

1, 2
3

1, 2,
3
4

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 4, 2
5
6

1, 1, 4, 2
5
6

5

1, 4, 2
5

1, 2
5
7

Floor 02
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)

1, 2
3

Floor 02
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = $96^{3/4}$”, $57^{3/4}$”, 36”	4. Cut to (b)

1, 2,
3
4

Floor 02
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

b = 138-3/4”

M =horizontally
N = header 1 and header 2

B = Header 2 and Joist 7

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Floor 02
Joists

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Floor 02
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
b = 99-1/4”	4. Cut to (b)
M =horizontally N = header 1 and header 2	5. Attach pieces (M) to (N)
B = Header 3 and Joist 10	6. Double (B)

Floor 02
Joists

1, 1, 1, 4, 2
5
6

Mutation 04

1, 1, 2
3
5

1, 1, 4, 2
5

1, 1, 2
3
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 2
5
7

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = horizontally N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 2
3
5

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = 137”	4. Cut to (b)
M = horizontally N = top of foundation wall 01 and 03	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 4, 2
5

Floor 01
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = vertically N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

1, 1, 2
3
5

Floor 01
Joists

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Joist	2. Designate piece(s) as (X)
Y = 16” on center	4. Cut to (b)
b = 144”	5. Attach pieces (M) to (N)
M =vertically N = marks on headers	

Floor 01
Joists

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Floor 01
Subflooring

Given Information	Actions
x = 48” y = 96” z = 5/8”	1. Select (x) x (y) x (z) OSB
X = Subflooring	2. Designate piece(s) as (X)
M =horizontally N = to floor joists. Long direction should go perpendicular to direction of joists.	5. Attach pieces (M) to (N)
Y = until all Floor is completely covered. Stagger boards @ midpoint.	7. Repeat (Y)

Floor 01
Subflooring

1, 2
5
7

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

9
1, 4, 2,
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 01
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Soleplate

1, 4, 2
3

Wall 01
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Top plate

1, 1, 4, 2
3

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = soleplate and top plate, excluding studs 4 and 8

B = studs 3, 5, 7, 9

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 01
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 01
Door 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of door frame	6. Double (B)
B = header	9. Insert (H)
H = Door 01 in between studs 3 and 5	

Wall 01
Door 01

9
1, 4, 2,
6
5

Wall 01
Door 01

Given Information	Actions
X = studs 3.2 ,4, 5.2	1. Select (X)
b = 8”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Door 01

1, 4
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 01	
B = top of trimmers	

Wall 01
Window 01

1, 4, 2
5
9

Wall 01
Window 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 01
Window 01

1, 4, 2
6
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Window 01

1, 4
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 01 (M) to (N)

Wall 01
Window 01

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

5

Wall 02
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Soleplate

1, 4, 2
3

Wall 02
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Top plate

1, 1, 4, 2
3

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = Soleplate 1 and Top plate 1, excluding stud 3

B = studs 2, 4, 6

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 02
Studs

1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Studs

Given Information

x = 2”
y = 4”
z = 192”

X = Studs

b = 92”

M = vertically

N = Soleplate 2 and Top plate 2, excluding stud 7

B = studs 8

Actions

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 02
Studs

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 02	
B = top of trimmers	

Wall 02
Window 02

1, 4, 2
5
9

x = 2”
y = 8”
z = 192”

X = Header

b = 30”

M = horizontally

N = top of window frame

B = header

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 02
Window 02

1, 4, 2
6
5

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 02
Window 02

1, 4
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2	
Y = trimmers	1. Select (X)
b = 24”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 03	9. Insert (H) to (B)
B = top of trimmers	

Wall 02
Window 03

1, 4, 2
5
9

Mutation 05

1, 1, 2
3
5

1, 1, 4, 2
5

1, 1, 2
3
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

1, 2
5
7

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = horizontally N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 2
3
5

Floor 01
Sill

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Sill	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
b = 137”	4. Cut to (b)
M = horizontally N = top of foundation wall 01 and 03	5. Attach pieces (M) to (N)

Floor 01
Sill

1, 1, 4, 2
5

Floor 01
Header

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) dimensional lumber
X = Header	2. Designate piece(s) as (X)
Y = 16” on center	3. Mark piece @ (Y)
M = vertically N = top of foundation wall 02 and 04	5. Attach pieces (M) to (N)

1, 1, 2
3
5

Floor 01
Joists

Given Information

x = 2”
y = 8”
z = 192”

X = Joist

Y = 16” on center

b = 144”

M =vertically
N = marks on headers

Actions

1. Select (x) x (y) x (z) dimensional lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

Floor 01
Joists

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5

Floor 01
Subflooring

Given Information	Actions
x = 48” y = 96” z = 5/8”	1. Select (x) x (y) x (z) OSB
X = Subflooring	2. Designate piece(s) as (X)
M =horizontally N = to floor joists. Long direction should go perpendicular to direction of joists.	5. Attach pieces (M) to (N)
Y = until all Floor is completely covered. Stagger boards @ midpoint.	7. Repeat (Y)

Floor 01
Subflooring

1, 2
5
7

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

9
1, 4, 2,
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

Wall 01
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Soleplate

1, 4, 2
3

Wall 01
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Top plate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 144”	4. Cut to (b)

Wall 01
Top plate

1, 1, 4, 2
3

Wall 01
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate and top plate, excluding studs 4 and 8	6. Double (B)
B = studs 3, 5, 7, 9	

Wall 01
Studs

1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 01
Door 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of door frame	6. Double (B)
B = header	9. Insert (H)
H = Door 01 in between studs 3 and 5	

Wall 01
Door 01

9
1, 4, 2,
6
5

Wall 01
Door 01

Given Information	Actions
X = studs 3.2 ,4, 5.2	1. Select (X)
b = 8”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Door 01

1, 4
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 01	
B = top of trimmers	

Wall 01
Window 01

1, 4, 2
5
9

Wall 01
Window 01

Given Information	Actions
x = 2” y = 8” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Header	2. Designate piece(s) as (X)
b = 30”	4. Cut to (b)
M = horizontally	5. Attach pieces (M) to (N)
N = top of window frame	6. Double (B)
B = header	

Wall 01
Window 01

1, 4, 2
6
5

Wall 01
Window 01

Given Information	Actions
X = studs 7.2, 8, 9.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 01
Window 01

1, 4
5

Given Information	Actions
M = vertically N = Floor 01	5. Attach Wall 01 (M) to (N)

Wall 01
Window 01

5

1, 4, 2
3

1, 4, 2
3
6
5

1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

1, 4, 2
5
9

1, 4, 2
6
5

1, 4
5

5

5

Wall 02
Soleplate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Soleplate	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Soleplate

1, 4, 2
3

Wall 02
Top plate

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimenisonal Lumber
X = Top plates	2. Designate piece(s) as (X)
Y = 16” O.C.	3. Mark piece @ (Y)
b = 96”	4. Cut to (b)

Wall 02
Top plate

1, 1, 4, 2
3

Wall 02
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 1 and Top plate 1, excluding stud 3	6. Double (B)
B = studs 2, 4, 6	

Wall 02
Studs

1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Studs

Given Information	Actions
x = 2” y = 4” z = 192”	1. Select (x) x (y) x (z) Dimensional Lumber
X = Studs	2. Designate piece(s) as (X)
b = 92”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = Soleplate 2 and Top plate 2, excluding stud 7	6. Double (B)
B = studs 8	

Wall 02
Studs

1, 1, 1, 1, 1, 1, 1, 4, 2
5
6

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
Y = trimmers	2. Designate piece(s) as (Y)
b = 36”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = soleplate @ regular stud spacing	9. Insert (H) to (B)
H = Window 02	
B = top of trimmers	

Wall 02
Window 02

1, 4, 2
5
9

x = 2”
y = 8”
z = 192”

X = Header

b = 30”

M = horizontally

N = top of window frame

B = header

1. Select (x) x (y) x (z) Dimensional Lumber

2. Designate piece(s) as (X)

4. Cut to (b)

5. Attach pieces (M) to (N)

6. Double (B)

Wall 02
Window 02

1, 4, 2
6
5

Wall 02
Window 02

Given Information	Actions
X = studs 2.2, 3, 4.2	1. Select (X)
b = 13”	4. Cut to (b)
M = vertically	5. Attach pieces (M) to (N)
N = top of headers @ regular stud spacing	

Wall 02
Window 02

1, 4
5

Wall 02
Window 03

Given Information	Actions
X = studs 6.2, 7, 8.2	
Y = trimmers	1. Select (X)
b = 24”	2. Designate piece(s) as (Y)
M = vertically	4. Cut to (b)
N = soleplate @ regular stud spacing	5. Attach pieces (M) to (N)
H = Window 03	9. Insert (H) to (B)
B = top of trimmers	

Wall 02
Window 03

1, 4, 2
5
9

Textual Ecosystem 02: Domestic Averages

The results from the construction manual proved to be driven from aesthetic decisions, so I began to adapt my textual ecosystem to address the typical criteria used when purchasing homes; cost, size, and location.

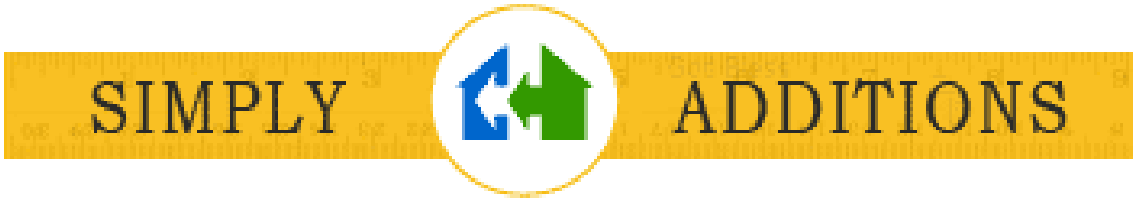
I was able to extract data from certain domestic organizations such as; simplyadditions.com, The National Association of Homebuilders, and the National Association of Realtors:

1) Simply Additions was used for the base floorplans /designs and budget.

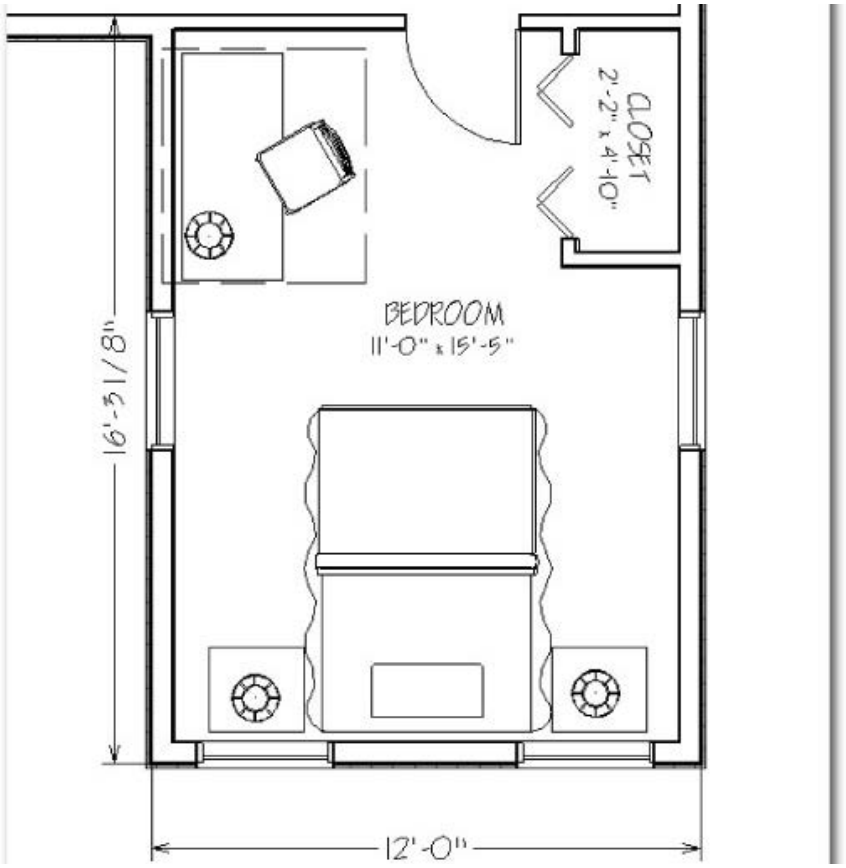
2) The National Association of Home Buyers designates the average amount of square footage per space in a house depending on the overall size of the house. The NAHB also designates the percentage of siding material per geographic region of the country.

3) The National Association of Realtors portrays trends in size, cost, and yard size for varying age groups and incomes.

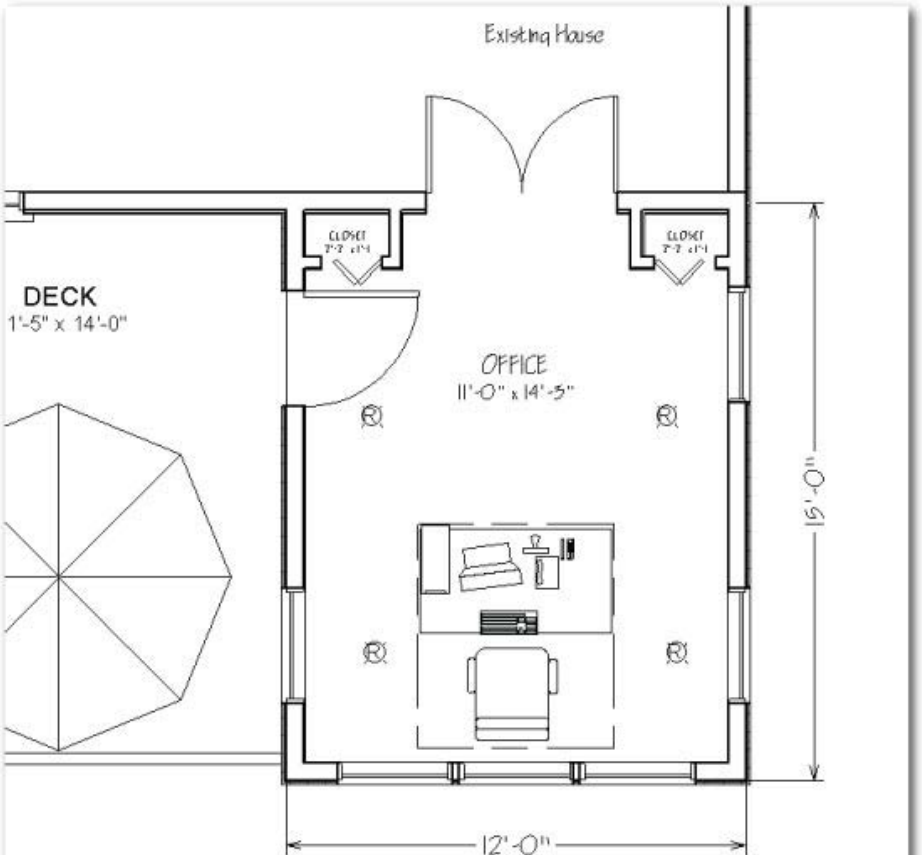
Helping You Become The Envy of The Neighborhood




Two Story Extension
Add +360 Square Feet of Space to your house!
Deluxe Package $71,000
Dream Plans by www.SimplyAdditions.com
"If You Can Dream It, You Can Built It"
Interior Photo 1
Interior Photo 2
Floor Layout
Before
After



First Floor



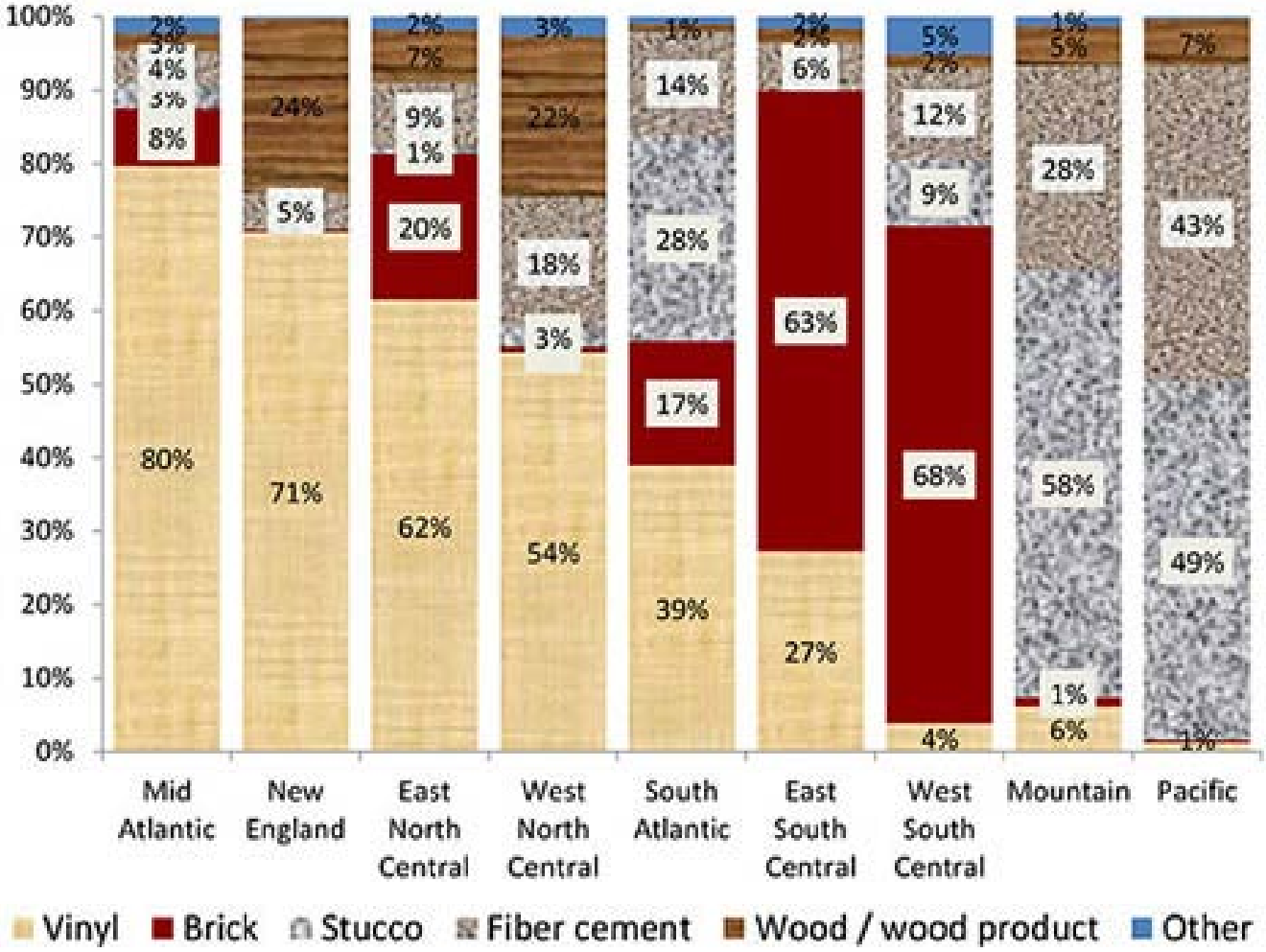
Second Floor


NAHB
National Association
of Home Builders

Table 2. Average Size of Rooms/Spaces When Present (Square Feet)

	All New Homes	By Home Size		
		Under 2,000 square feet	2,000-2,999 square feet	3,000 square feet plus
Master Bedroom	309	231	271	411
Other Bedrooms	481	261	416	713
Master Bathroom	160	115	144	210
Other Bathrooms	191	93	146	313
Laundry Room	102	67	87	145
Entry Foyer	101	65	89	138
Separate Kitchen	306	193	275	423
Separate Dining Room	216	148	196	281
Separate Living Room	330	256	319	393
Separate Family Room	404	311	355	503
Great Room	550	487	481	680
Other Finished Space	530	270	435	825
Closet Space	146	106	125	201
Walk-in Kitchen Pantry	37	17	31	51

Chart 4. Primary Siding Material of New Single-Family Houses Started in 2013



NATIONAL ASSOCIATION *of* REALTORS®

CHARACTERISTICS OF HOMES PURCHASED

Exhibit 2-8
PRICE OF HOME PURCHASED
(Percentage Distribution)

		AGE OF HOME BUYER				
	All Buyers	**34 and younger**	**35 to 49**	**50 to 59**	**60 to 68**	**69 to 89**
Less than $75,000	6%	6%	4%	8%	6%	7%
$75,000 to $99,999	6	8	4	6	7	5
$100,000 to $124,999	7	8	6	6	7	7
$125,000 to $149,999	10	13	7	7	10	9
$150,000 to $174,999	9	11	7	9	8	11
$175,000 to $199,999	8	8	8	9	7	12
$200,000 to $249,999	14	15	14	14	14	12
$250,000 to $299,999	10	9	10	13	11	12
$300,000 to $349,999	8	7	9	5	9	8
$350,000 to $399,999	6	5	8	5	6	4
$400,000 to $499,999	8	7	9	7	5	9
$500,000 or more	9	5	14	10	10	5
Median price	$216,000	$189,900	$250,000	$216,000	$215,000	$190,100

CHARACTERISTICS OF HOMES PURCHASED

Exhibit 2-10

SIZE OF HOME PURCHASED

(Percentage Distribution)

		AGE OF HOME BUYER				
	All Buyers	34 and younger	35 to 49	50 to 59	60 to 68	69 to 89
1,000 sq ft or less	1%	1%	1%	1%	1%	*
1,001 to 1,500 sq ft	15	19	11	14	16	18
1,501 to 2,000 sq ft	28	31	22	30	30	28
2,001 to 2,500 sq ft	24	24	24	23	25	28
2,501 to 3,000 sq ft	14	12	18	14	13	13
3,001 to 3,500 sq ft	9	7	12	10	9	8
3,501 sq ft or more	8	6	14	8	7	5
Median (sq ft)	1,870	1,720	2,100	1,890	1,800	1,800

** Less than 1 percent*

Exhibit 2-14
CHARACTERISTICS OF HOME ON WHICH BUYER COMPROMISED
(Percent of Respondents)

		AGE OF HOME BUYER				
	All Buyers	34 and younger	35 to 49	50 to 59	60 to 68	69 to 89
Price of home	23%	24%	24%	21%	18%	22%
Size of home	20	24	19	19	17	15
Condition of home	18	19	18	17	16	15
Distance from job	16	19	18	12	4	1
Lot size	16	22	16	13	11	11
Style of home	14	18	16	15	14	10
Distance from friends or family	7	9	6	7	6	7
Quality of the neighborhood	5	6	5	4	4	6
Quality of the schools	4	7	5	1	*	*
Distance from school	2	2	4	1	*	*
None - Made no compromises	33	23	29	37	45	48
Other compromises not listed	8	7	9	9	7	8

** Less than 1 percent*

Exhibit 6-13
PRICE OF HOME PURCHASED COMPARED TO HOME RECENTLY SOLD
(Median)

	Price of home sold	Price of home purchased	Difference
34 and younger	$171,800	$245,000	$73,200
35 to 49	$235,000	$304,000	$69,000
50 to 59	$267,000	$258,000	-$9,000
60 to 68	$238,400	$225,900	-$12,500
69 to 89	$240,000	$210,000	-$30,000

HOME SELLERS AND THEIR SELLING EXPERIENCE

Exhibit 6-11
SIZE OF HOME PURCHASED COMPARED TO HOME RECENTLY SOLD
(Median Square Feet)

	Size of home sold	Size of home purchased	Difference
34 and younger	1,680	2,270	590
35 to 49	1,950	2,400	450
50 to 59	2,140	2,100	-40
60 to 68	2,000	1,840	-160
69 to 89	2,000	1,850	-150

Mutation Series v3

This series of models represent different iterations of a generic two story bedroom addition extracted from simplyadditions.com. The framing components of this addition were organized and compiled into a spreadsheet. This spreadsheet then served as a basis for mutations to occur. These mutations are controlled by constraints extracted from Textual Ecosystem 02; square footage, lot size, amount of material, and percentage of siding material. Client profiles (age and income) taken from a survey from the National Association of Realtors to guide the manipulation of the same series of constraints; square footage, lot size, amount of material, and percentage of siding material.

3.1

Mutations			Client Profile					
Existing	1		Age	18-34	Special Notes			
Demo	0.2		Class	Lower				
Mutation 01	0.3		Geographic Range	Mid-Atlantic				
Mutation 02	0.2		Budget	200,000				
Mutation 03	0.5		Square footage Difference	590				
	2		Lot Size	Small				
Total	2							
Addition Cost	100,000							
Budget	200,000							
			Square Footage Per Addition					
			Average Sq. footage of bedroom addition	Square Footage of typical addition	Square Footage Difference	Adjusted Square Footage	# of Mutations	Square Footage per Mutation (feet)
			378.75	-360	177	195.75	3	65.25
Siding			Zoning					
Vinyl	80%			Maximum extension Side 01	Maximum extension Side 02	Maximum extension Side 03		
Other (Combined)	12%		Feet (real)	3	6	3		
Brick	8%		Inches (Model)	2.25	4.5	2.25		

| 2-Story Office & Bedroom Addition | | |

	Average Room Size in Proporiton to Overall Sq. Ft.							Square Footage Per Addition					
	New	Existing						Average Sq. footage of bedroom addition	Square Footage of typical addition	Square Footage Difference	Adjusted Square Footage	# of Mutations	Square Footage per Mutation (feet)
	All New Homes	Under 2,000 Sq. Ft	2,000 - 2,999 Sq. Ft	3,000 + Sq. Ft				378.75	-360	177	195.75	3	65.25
Other Bedrooms (2.4 per average)	481	261	416	713									
	200.4167	108.75	173.33333	297.08333	2.4								
Other Finished Space	530	270	435	825									
	Average Characteristics of Single Family Homes												
	U.S.					Middle Atlantic							
	2005	**2006**	**2007**	**2008**	**2009**								
Median Sqaure Footage	2253	2268	2227	2170	2100	2330							

Yard	Yard Width	House Footprint	Percentage of Lot	Maximum Lot Coverage	Side Lot 01	Side Lot Aggregate	Side Lot % of Lot Width	Minimum Side Lot % of Width	Front Yard Setback	Minimum Front Yard Setback	Diff.
	40	1069	0.208789063	0.3	10.5	14.5	0.3625	0.25	30	30	0
	Yard Depth	Yard Square Footage	Allowable Footprint		Side Lot 02				Rear Yard Depth	Minimum Rear Yard Depth	Diff.
	128	5120	1536		4				35	20	15
Zoning											
	Maximum extension Side 01	**Maximum extension Side 02**	**Maximum extension Side 03**								
Feet (real)	3	6	3								
Inches (Model)	2.25	4.5	2.25								

	Average Characteristics of Single Family Homes											
	U.S.					Middle Atlantic	East North Central					
	2005	2006	2007	2008	2009				Walls	# dedicated to Vinyl	# Dedicated to Brick	# Decicated to Other
	Primary Siding Material Share											
Vinyl	31.1	29.3	31.2	33	36.2	80	62		26	20.8	3.12	2.08
Brick	20.9	22.4	23.2	23.8	23.2	8	20					
Stucco	22.2	21.3	21.5	19.7	17.5	3	1					
Fiber Cement	9.9	12.7	12.1	11.9	13.1	4	9		Vinyl	80%		
Wood / Wood Product	8.5	7.7	8.2	9.4	8.3	3	7		Other (Combined)	12%		
Other	1.1	1.4	1.8	2.2	1.8	2	2		Brick	8%		

3.2

Mutations			Client Profile					
Existing	1		Age	50-69	Special Notes			
Demo	0.3		Class	Lower				
Mutation 01	0.3		Geographic Range	Mid-Atlantic				
Mutation 02	0.2		Budget	200,000				
Mutation 03	0.5		Square footage Difference	-100				
	2		Lot Size	Large				
Total	2							
Addition Cost	100,000							
Budget	200,000		Square Footage Per Addition					
			Average Sq. footage of bedroom addition	Square Footage of typical addition	Square Footage Difference	Adjusted Square Footage	# of Mutations	Square Footage per Mutation (feet)
			608.33333	-360	-100	148.33333	3	49.44444
Siding			Zoning					
Vinyl	80%			Maximum extension Side 01	Maximum extension Side 02	Maximum extension Side 03		
Other (Combined)	12%		Feet (real)	9	15	12		
Brick	8%		Inches (Model)	6.75	11.25	9		
Other (combined)	18%		Inches (Model)	5.0625	8.4375	6.75		

2-Story Office & Bedroom Addition									
								Existing	1
2x4	window height (2-1/4")	window width (1-7/8")	window cripples (2-1/4")	sole & top plates (9")	sole & top plates (11.25")	Studs (5-3/4")		Demo	0.2
	20	20	10	6	12	60		Mutation 01	0.3
0.2			2	1.2	2.4	12		Mutation 02	0.2
0.3			3	1.8	3.6	18		Mutation 03	0.5
0.2			2	1.2	2.4	12			
0.5			5	3	6	30			
2x6	Celing Joists (9")	Ceiling Rafters (5-3/4")	Ridgeplate cripples (2.5")					Total	1.5
	12	24	6						
0.2	2.4	4.8	1.2						
0.3	3.6	7.2	1.8						
0.2	2.4	4.8	1.2						
0.5	6	12	3						
2x8	Floor Joists (8.75")	Floor Headers (11.25")	Ridgeplates (11.25")	Deck Joists (4.5")	Deck Headers (7.5")				
	24	4	2	8	2				
0.2	4.8	0.8	0.4	1.6	0.4				
0.3	7.2	1.2	0.6	2.4	0.6				
0.2	4.8	0.8	0.4	1.6	0.4				
0.5	12	2	1	4	1				
sheathing	Floors (3"x6")	Walls (3"x6")	Roof (3"x6")	total					
	15	26	8	49					
0.2	3	5.2	1.6	9.8					
0.3	4.5	7.8	2.4	14.7					
0.2	3	5.2	1.6	9.8					
0.5	7.5	13	4	24.5					
4x8	Door / window Header (1-7/8")	Windows							
	11	10							
0.2	2.2	2							
0.3	3.3	3							
0.2	2.2	2							
0.5	5.5	5							

	Average Room Size in Proporiton to Overall Sq. Ft.							Square Footage Per Addition					
	New	Existing						Average Sq. footage of	Square Footage of typical addition	Square Footage Difference	Adjusted Square	# of Mutations	Square Footage per Mutation
	All New Homes	Under 2,000 Sq. Ft	2,000 - 2,999 Sq. Ft	3,000 + Sq. Ft				608.33333	-360	-100	148.33333	3	49.44444333
Other Bedrooms (2.4 per average)	481	261	416	713									
	200.4167	108.75	173.33333	297.08333	2.4								
Other Finished Space	530	270	435	825									
		378.75	608.33333	1122.0833									
	Average Characteristics of Single Family Homes												
	U.S.					**Middle Atlantic**							
	2005	**2006**	**2007**	**2008**	**2009**								
Median Sqaure Footage	2253	2268	2227	2170	2100	2330							

Yard	Yard Width	House Footprint	Percentage of Lot	Maximum Lot Coverage	Side Lot 01	Side Lot Aggregate	Side Lot % of Lot Width	Minimum Side Lot % of Width	Front Yard Setback	Minimum Front Yard Setback	Diff.
	40	1069	0.208789063	0.3	10.5	14.5	0.3625	0.25	30	30	0
	Yard Depth	Yard Square Footage	Allowable Footprint		Side Lot 02				Rear Yard Depth	Minimum Rear Yard Depth	Diff.
	128	5120	1536		4				35	20	15
	Maximum extension Side 01	Maximum extension Side 02	Maximum extension Side 03								
Feet (real)	9	15	12								
Inches (Model)	6.75	11.25	9								

	Average Characteristics of Single Family Homes											
	U.S.					Middle Atlantic	East North					
	2005	2006	2007	2008	2009				Walls	# dedicated	# Dedicated	# Decicated
	Primary Siding Material Share											
Vinyl	31.1	29.3	31.2	33	36.2	80	62		26	20.8	3.12	2.08
Brick	20.9	22.4	23.2	23.8	23.2	8	20					
Stucco	22.2	21.3	21.5	19.7	17.5	3	1					
Fiber Cement	9.9	12.7	12.1	11.9	13.1	4	9		Vinyl	80%		
Wood / Wood Product	8.5	7.7	8.2	9.4	8.3	3	7		Other (Combined)	12%		
Other	1.1	1.4	1.8	2.2	1.8	2	2		Brick	8%		

3.3

Mutations			Client Profile					
Existing	1		Age	18-34	Special Notes			
Demo	0.3		Class	Upper				
Mutation 01	0.6		Geographic Range	East North Central				
Mutation 02	0.5		Budget	300,000				
Mutation 03	0.4		Square footage Difference	590				
Mutation 04	0.25		Lot Size	Small				
Mutation 05	0.25							
	3							
Total	3		Square Footage Per Addition					
Addition Cost	100,000		Average Sq. footage of bedroom addition	Square Footage of typical addition	Square Footage Difference	Adjusted Square Footage	# of Mutations	Square Footage per Mutation (feet)
Budget	300,000		1122.083	-360	118	880.083	5	176.0166
Siding			Zoning					
Vinyl	62%			Maximum extension Side 01	Maximum extension Side 02	Maximum extension Side 03		
Brick	20%		Feet (real)	3	6	3		
Other (combined)	18%		Inches (Model)	2.25	4.5	2.25		

2-Story Office & Bedroom Addition									
								Existing	1
2x4	window height (2-1/4")	window width (1-7/8")	window cripples (2-1/4")	sole & top plates (9")	sole & top plates (11.25")	Studs (5-3/4")		Demo	0.3
	20	20	10	6	12	60		Mutation 01	0.6
0.3	[redacted]		3	1.8	3.6	18		Mutation 02	0.5
0.6			6	3.6	7.2	36		Mutation 03	0.4
0.5			5	3	6	30		Mutation 04 + 05	0.25
0.4			4	2.4	4.8	24			
0.25			2.5	1.5	3	15			
2x6	Celing Joists (9")	Ceiling Rafters (5-3/4")	Ridgeplate cripples (2.5")						
	12	24	6					Total	3
0.3	3.6	7.2	1.8						
0.6	7.2	14.4	3.6						
0.5	6	12	3						
0.4	4.8	9.6	2.4						
0.25	3	6	1.5						
2x8	Floor Joists (8.75")	Floor Headers (11.25")	Ridgeplates (11.25")	Deck Joists (4.5")	Deck Headers (7.5")				
	24	4	2	8	2				
0.3	7.2	1.2	0.6	2.4	0.6				
0.6	14.4	2.4	1.2	4.8	1.2				
0.5	12	2	1	4	1				
0.4	9.6	1.6	0.8	3.2	0.8				
0.25	6	1	0.5	2	0.5				
sheathing	Floors (3"x6")	Walls (3"x6")	Roof (3"x6")	total					
	15	24	8	47					
0.3	4.5	7.2	2.4	14.1					
0.6	9	14.4	4.8	28.2					
0.5	7.5	12	4	23.5					
0.4	6	9.6	3.2	18.8					
0.25	3.75	6	2	11.75					
4x8	Door / window Header (1-7/8")	Windows							
	11	10							
0.3	3.3	3							
0.6	6.6	6							
0.5	5.5	5							
0.4	4.4	4							
0.25	2.75	2.5							

	Average Room Size in Proporiton to Overall Sq. Ft.							Square Footage Per Addition					
	New	Existing						Average Sq. footage of bedroom addition	Square Footage of typical addition	Square Footage Difference	Adjusted Square Footage	# of Mutations	Square Footage per Mutation (feet)
	All New Homes	Under 2,000 Sq. Ft	2,000 - 2,999 Sq. Ft	3,000 + Sq. Ft				1122.083	-360	118	880.083	5	176.0166
Other Bedrooms (2.4 per average)	481	261	416	713									
	200.4167	108.75	173.33333	297.08333	2.4								
Other Finished Space	530	270	435	825									
	Average Characteristics of Single Family Homes												
	U.S.					Middle Atlantic							
	2005	**2006**	**2007**	**2008**	**2009**								
Median Sqaure Footage	2253	2268	2227	2170	2100	2330							

Yard	Yard Width	House Footprint	Percentage of Lot	Maximum Lot Coverage	Side Lot 01	Side Lot Aggregate	Side Lot % of Lot Width	Minimum Side Lot % of Width	Front Yard Setback	Minimum Front Yard Setback	Diff.
	40	1069	0.208789063	0.3	10.5	14.5	0.3625	0.25	30	30	0
	Yard Depth	**Yard Square Footage**	**Allowable Footprint**		**Side Lot 02**				**Rear Yard Depth**	**Minimum Rear Yard Depth**	**Diff.**
	128	5120	1536		4				35	20	15
	Maximum extension Side 01	**Maximum extension Side 02**	**Maximum extension Side 03**								
Feet (real)	3	6	3								
Inches (Model)	2.25	4.5	2.25								

	Average Characteristics of Single Family Homes							
	U.S.					Middle Atlantic	East North	
	2005	2006	2007	2008	2009			
	Primary Siding Material Share							
Vinyl	31.1	29.3	31.2	33	36.2	80	62	
Brick	20.9	22.4	23.2	23.8	23.2	8	20	
Stucco	22.2	21.3	21.5	19.7	17.5	3	1	
Fiber Cement	9.9	12.7	12.1	11.9	13.1	4	9	
Wood / Wood Product	8.5	7.7	8.2	9.4	8.3	3	7	
Other	1.1	1.4	1.8	2.2	1.8	2	2	

Walls	# dedicated	# Dedicated	# Decicated	
26	16.12	5.2	4.68	
Vinyl	62%			
Other (Combined)	20%			
Brick	18%			

3.4

Mutations			Client Profile					
Existing	1		Age	50-69	Special Notes			
Demo	0.3		Class	Upper				
Mutation 01	0.6		Geographic Range	East North Central				
Mutation 02	0.5		Budget	300,000				
Mutation 03	0.4		Square footage Difference	-100				
Mutation 04	0.25		Lot Size	Small				
Mutation 05	0.25							
	3							
Total	3							
Addition Cost	100,000		Square Footage Per Addition					
Budget	300,000		Average Sq. footage of bedroom addition	Square Footage of typical addition	Square Footage Difference	Adjusted Square Footage	# of Mutations	Square Footage per Mutation (feet)
			1122.083	-360	-100	662.083	5	132.4166
Siding			Zoning					
Vinyl	62%			Maximum extension Side 01	Maximum extension Side 02	Maximum extension Side 03		
Brick	20%		Feet (real)	9	15	12		
Other (combined)	18%		Inches (Model)	6.75	11.25	9		

2-Story Office & Bedroom Addition									
								Existing	1
2x4	window height (2-1/4")	window width (1-7/8")	window cripples (2-1/4")	sole & top plates (9")	sole & top plates (11.25")	Studs (5-3/4")		Demo	0.3
	20	20	10	6	12	60		Mutation 01	0.6
0.3			3	1.8	3.6	18		Mutation 02	0.5
0.6			6	3.6	7.2	36		Mutation 03	0.4
0.5			5	3	6	30		Mutation 04 + 05	0.25
0.4			4	2.4	4.8	24			
0.25			2.5	1.5	3	15			
2x6	Celing Joists (9")	Ceiling Rafters (5-3/4")	Ridgeplate cripples (2.5")						
	12	24	6					Total	3
0.3	3.6	7.2	1.8						
0.6	7.2	14.4	3.6						
0.5	6	12	3						
0.4	4.8	9.6	2.4						
0.25	3	6	1.5						
2x8	Floor Joists (8.75")	Floor Headers (11.25")	Ridgeplates (11.25")	Deck Joists (4.5")	Deck Headers (7.5")				
	24	4	2	8	2				
0.3	7.2	1.2	0.6	2.4	0.6				
0.6	14.4	2.4	1.2	4.8	1.2				
0.5	12	2	1	4	1				
0.4	9.6	1.6	0.8	3.2	0.8				
0.25	6	1	0.5	2	0.5				
sheathing	Floors (3"x6")	Walls (3"x6")	Roof (3"x6")	total					
	15	24	8	47					
0.3	4.5	7.2	2.4	14.1					
0.6	9	14.4	4.8	28.2					
0.5	7.5	12	4	23.5					
0.4	6	9.6	3.2	18.8					
0.25	3.75	6	2	11.75					
4x8	Door / window Header (1-7/8")	Windows							
	11	10							
0.3	3.3	3							
0.6	6.6	6							
0.5	5.5	5							
0.4	4.4	4							
0.25	2.75	2.5							

	Average Room Size in Proporiton to Overall Sq. Ft.							Square Footage Per Addition					
	New	Existing						Average Sq. footage of bedroom addition	Square Footage of typical addition	Square Footage Difference	Adjusted Square Footage	# of Mutations	Square Footage per Mutation (feet)
	All New Homes	Under 2,000 Sq. Ft	2,000 - 2,999 Sq. Ft	3,000 + Sq. Ft				1122.083	-360	-100	662.083	5	132.4166
Other Bedrooms (2.4 per average)	481	261	416	713									
	200.4167	108.75	173.33333	297.08333	2.4								
Other Finished Space	530	270	435	825									
	Average Characteristics of Single Family Homes												
	U.S.					Middle Atlantic							
	2005	**2006**	**2007**	**2008**	**2009**								
Median Sqaure Footage	2253	2268	2227	2170	2100	2330							

Yard	Yard Width	House Footprint	Percentage of Lot	Maximum Lot Coverage	Side Lot 01	Side Lot Aggregate	Side Lot % of Lot Width	Minimum Side Lot % of Width	Front Yard Setback	Minimum Front Yard Setback	Diff.
	40	1069	0.208789063	0.3	10.5	14.5	0.3625	0.25	30	30	0
	Yard Depth	Yard Square Footage	Allowable Footprint		Side Lot 02				Rear Yard Depth	Minimum Rear Yard Depth	Diff.
	128	5120	1536		4				35	20	15
	Maximum extension Side 01	Maximum extension Side 02	Maximum extension Side 03								
Feet (real)	9	15	12								
Inches (Model)	6.75	11.25	9								

	Average Characteristics of Single Family Homes												
	U.S.					Middle Atlantic	East North						
	2005	2006	2007	2008	2009				Walls	# dedicated	# Dedicated	# Decicated	
	Primary Siding Material Share												
Vinyl	31.1	29.3	31.2	33	36.2	80	62		26	16.12	5.2	4.68	
Brick	20.9	22.4	23.2	23.8	23.2	8	20						
Stucco	22.2	21.3	21.5	19.7	17.5	3	1						
Fiber Cement	9.9	12.7	12.1	11.9	13.1	4	9		Vinyl	62%			
Wood / Wood Product	8.5	7.7	8.2	9.4	8.3	3	7		Other (Combined)	20%			
Other	1.1	1.4	1.8	2.2	1.8	2	2		Brick	18%